

WHAT IS CLAIMED IS:

1 1. A data structure disposed before a page in a document data stream for
 2 referencing and identifying resource objects, the data structure providing an
 3 indication of resource objects to be made available prior to attempting to print the
 4 page.

1 2. The data structure of claim 1, wherein the data structure is disposed at
 2 a beginning of a document before a first page to providing an indication of all
 3 resource objects that will be needed to print the document.

1 3. The data structure of claim 2 wherein all of the resource objects of the
 2 document are made available prior to attempting to print the first page.

1 4. The data structure of claim 1 further comprising a mapping structure
 2 for identifying images, PostScript page objects, PDF page objects, PostScript
 3 resource objects or PDF resource objects.

1 5. The data structure of claim 4 further comprising a mapping structure
 2 for identifying overlay resource objects.

1 6. The data structure of claim 1 further comprising a mapping structure
 2 for identifying overlay resource objects.

1 7. The data structure of claim 1 further comprising at least one of a map
2 data resource field for identifying images, PostScript page objects, PDF page
3 objects, PostScript resource objects or PDF resource objects and a map page
4 overlay structure for identifying overlays, wherein the order of the map data resource
5 structure and the map page overlay structure is flexible.

1 ~~8.~~ A data stream defining a print document, the data stream comprising
2 at least one data structure disposed before a page in the document data stream for
3 referencing and identifying resource objects, the data structure providing an
4 indication of resource objects to be made available prior to attempting to print the
5 page.

1 9. The data stream of claim 8, wherein the data structure is disposed at a
2 beginning of a document before a first page to provide an indication of all resource
3 objects that will be needed to print the document

1 10. The data stream of claim 9 wherein all of the resource objects of the
2 document are made available prior to attempting to print the first page.

1 11. The data stream of claim 8 further comprising a mapping structure for
2 identifying images, PostScript page objects, PDF page objects, PostScript resource
3 objects or PDF resource objects.

1 12. The data stream of claim 11 further comprising a mapping structure for
2 identifying overlays.

1 13. The data stream of claim 8 further comprising a mapping structure for
2 identifying overlays.

1 14. The data stream of claim 8 further comprising at least one of a map
2 data resource structure for identifying images, PostScript page objects, PDF page
3 objects, PostScript resource objects or PDF resource objects and a map page
4 overlay structure for identifying overlays, wherein the order of the map data resource
5 structure and the map page overlay structure is flexible.

1 15. A method of printing, comprising:
2 receiving a print request for printing a document;
3 generating a presentation data stream defining the document, the
4 presentation data stream including at least one page group, the page group defining
5 at least one page for printing; and
6 placing a resource environment group before a page group, the resource
7 environment group referencing and identifying resource objects for at least the page
8 group, the resource environment group providing an indication of resource objects
9 to be made available prior to attempting to print the at least one page group.

1 16. The method of claim 15 wherein the page group comprises structures
2 for defining a single page.

1 17. The method of claim 15 wherein the page group comprises structures
2 for defining a plurality of pages.

1 18. The method of claim 15 wherein the resource environment group
2 references and identifies resource objects for all page groups in the document.

1 19. The method of claim 15 wherein the placing comprises placing an Nth
2 resource environment group before an Nth page group.

1 20. The method of claim 15 further comprising reading the resource
2 environment group and ensuring all resource objects identified by the resource
3 environment group are available to the printer before printing pages associated with
4 the resource environment group.

1 21. The method of claim 20 wherein the ensuring comprises downloading
2 any resources identified by the resource environment group that are not resident at
3 the printer.

1 22. A method of printing, comprising:
2 receiving a print data stream;
3 determining whether the print data stream includes a resource environment
4 group;
5 downloading resource objects identified by the resource environment group
6 when the print data stream includes a resource environment group; and
7 printing the pages defined by the print data stream.

1 23. The method of claim 22 wherein the determining further comprises
2 determining whether the print data stream includes an Nth resource environment
3 group associated with an Nth page group and the downloading further comprises
4 downloading resource objects for the Nth page group identified by the Nth resource
5 environment group when the print data stream includes an Nth resource
6 environment group associated with an Nth page group.

1 ~~24.~~ A system for printing, comprising:
2 a document generator for generating a presentation data stream defining the
3 document, the presentation data stream including at least one page group, the page
4 group defining at least one page for printing and including a resource environment
5 group before a page group, the resource environment group referencing and
6 identifying resource objects for at least the page group, the resource environment
7 group providing an indication of resource objects to be made available prior to
8 attempting to print the at least one page group;
9 a print server, coupled to the document generator, the print server
10 determining whether the print data stream includes a resource environment group
11 and downloading resource objects identified by the resource environment group
12 when the print data stream includes a resource environment group; and
13 a control unit, coupled to the print server, for printing the document using the
14 resource objects downloaded by the print server.

1 25. The print system of claim 24 wherein the print server determines
2 whether the print data stream includes an Nth resource environment group
3 associated with an Nth page group and downloads resource objects for the Nth
4 page group identified by the Nth resource environment group when the print data
5 stream includes an Nth resource environment group associated with an Nth page
6 group.

1 ~~26.~~ An article of manufacture comprising a program storage medium
2 readable by a computer, the medium tangibly embodying one or more programs of
3 instructions executable by the computer to perform a method for printing, the
4 method comprising:
5 receiving a print request for printing a document;
6 generating a presentation data stream defining the document, the
7 presentation data stream including at least one page group, the page group defining
8 at least one page for printing; and
9 placing a resource environment group before a page group, the resource
10 environment group referencing and identifying resource objects for at least the page
11 group, the resource environment group providing an indication of resource objects
12 to be made available prior to attempting to print the at least one page group.

- 1 ~~27.~~ An article of manufacture comprising a program storage medium
2 readable by a computer, the medium tangibly embodying one or more programs of
3 instructions executable by the computer to perform a method for printing, the
4 method comprising:
5 receiving a print data stream;
6 determining whether the print data stream includes a resource environment
7 group; and
8 downloading resource objects identified by the resource environment group
9 when the print data stream includes a resource environment group;
10 printing the pages defined by the print data stream.

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